Amendments to the Claims

1-10. (Canceled)

11. (New): A method for identifying a selective blocker of a persistent Na^+ channel whereby the method comprises the steps of:

a) providing a test sample 1 comprising

i) a Na^+-free physiological buffer;

ii) a voltage-sensitive fluorescence dye;

iii) a cell having a K^+ channel, a transient Na^+ channel and a persistent Na^+ channel; and

iv) a potential Na^+ channel blocker;

b) depolarizing membrane of the cell in the test sample 1;

c) generating a current through the persistent Na+ channel by adding Na^+ to test sample 1 at least 10 msec after step (b);

d) detecting fluorescence emitted by the voltage-sensitive dye in test sample 1;

e) providing a control sample 1 comprising

i) a Na^+-free physiological buffer;

ii) a voltage-sensitive fluorescence dye; and

iii) a cell having a K^+ channel, a transient Na^+ channel and a persistent Na^+ channel;

f) depolarizing membrane of the cell in the control sample 1;

g) generating a current through the persistent Na^+ channel by adding Na^+ ions to the control sample 1 at least 10 msec after step (f);

h) detecting fluorescence emitted by the voltage-sensitive dye in the control sample 1;

i) determining the relative emitted fluorescence 1 by comparing the emitted fluorescence from step (d) to the emitted fluorescence from step (h);

j) providing a test sample 2 comprising

i) a physiological buffer;

ii) a voltage-sensitive fluorescence dye;

iii) a cell having a K^+ channel and a transient Na^+ channel; and

iv) a potential Na^+ channel blocker

k) depolarizing membrane of the cell in test sample 2;

l) detecting the fluorescence emitted by the voltage-sensitive dye in test sample 2;

m) providing a control sample 2 comprising

i) a physiological buffer;

ii) a voltage-sensitive fluorescence dye; and

iii) a cell having a K^+ channel and a transient Na^+ channel;

n) depolarizing membrane of the cell in control sample 2;

o) detecting the fluorescence emitted by the voltage-sensitive dye in control sample 2;

p) determining a relative emitted fluorescence 2 by comparing the emitted fluorescence from step (l) to the emitted fluorescence from step (o);

q) comparing the relative emitted fluorescence 1 in step (i) with the relative emitted fluorescence 2 in step (p).

12. (New): The method according to Claim 11, wherein the cell expresses an endogenous persistent Na^+ channel.

13. (New): The method according to Claim 11, wherein the cell expresses an exogenous persistent Na^+ channel.

14. (New): The method according to Claim 13, wherein the cell is HEK-293.

15. (New): The method according to Claim 11, wherein the cell expresses a Type III persistent Na^+ channel.

16. (New): The method according to Claim 11, wherein the membrane depolarization of step (b) is by K^+ addition.

17. (New): The method according to Claim 11, wherein the membrane depolarization of step (f) is by K^+ addition.

18. (New): The method according to Claim 11, wherein the membrane depolarization of step (b) and step (f) is by K^+ addition.

19. (New): The method according to Claim 11, wherein the membrane depolarization of step (b) is by field stimulation.

20. (New): The method according to Claim 11, wherein the membrane depolarization of step (f) is by field stimulation.

21. (New): The method according to Claim 11, wherein the membrane depolarization of step (b) and step (f) is by field stimulation.

22. (New): The method according to Claim 11, wherein the membrane depolarization of step (k) is by field stimulation.

23. (New): The method according to Claim 11, wherein the membrane depolarization of step (n) is by field stimulation.

24. (New): The method according to Claim 11, wherein the membrane depolarization of step (k) and step (n) is by field stimulation.

25. (New): A method for identifying a blocker of a persistent Na^+ channel whereby the method comprises the steps of:

    a) providing a test sample 1 comprising

        i) a Na^+-free physiological buffer;

        ii) a voltage-sensitive fluorescence dye;

        iii) a cell having a K^+ channel, a transient Na^+ channel and a persistent Na^+ channel; and

        iv) a potential Na^+ channel blocker;

    b) depolarizing membrane of the cell in the test sample 1;

    c) generating a current through the persistent Na+ channel by adding Na^+ to test sample 1 at least 10 msec after step (b);

    d) detecting fluorescence emitted by the voltage-sensitive dye in test sample 1;

    e) providing a control sample 1 comprising

        i) a Na^+-free physiological buffer;

        ii) a voltage-sensitive fluorescence dye; and

        iii) a cell having a K^+ channel, a transient Na^+ channel and a persistent Na^+ channel;

    f) depolarizing membrane of the cell in the control sample 1;

    g) generating a current through the persistent Na^+ channel by adding Na^+ ions to the control sample 1 at least 10 msec after step (f);

    h) detecting fluorescence emitted by the voltage-sensitive dye in the control sample 1;

i) comparing the emitted fluorescence from step (d) to the emitted fluorescence from step (h).

26. (New): The method according to Claim 25, wherein the cell expresses an endogenous persistent Na^+ channel.

27. (New): The method according to Claim 25, wherein the cell expresses an exogenous persistent Na^+ channel.

28. (New): The method according to Claim 27, wherein the cell is HEK-293.

29. (New): The method according to Claim 25, wherein the cell expresses a Type III persistent Na^+ channel.

30. (New): The method according to Claim 25, wherein the membrane depolarization of step (b) is by K^+ addition.

31. (New): The method according to Claim 25, wherein the membrane depolarization of step (f) is by K^+ addition.

32. (New): The method according to Claim 25, wherein the membrane depolarization of step (b) and step (f) is by K^+ addition.

33. (New): The method according to Claim 25, wherein the membrane depolarization of step (b) is by field stimulation.

34. (New): The method according to Claim 25, wherein the membrane depolarization of step (f) is by field stimulation.

35. (New): The method according to Claim 25, wherein the membrane depolarization of step (b) and step (f) is by field stimulation.

36. (New): A method for identifying a selective blocker of a persistent Na^+ channel whereby the method comprises the steps of:

a) providing a test sample 1 comprising

i) a physiological buffer;

ii) a voltage-sensitive fluorescence dye; and

iii) a cell having a K^+ channel and a persistent Na^+ channel wherein a resting membrane potential of the cell is approximately halfway between an equilibrium potential of Na^+ and an equilibrium potential of K^+;

b) detecting fluorescence emitted by the voltage-sensitive dye in test sample 1;

c) adding a potential Na^+ channel blocker to test sample 1;

d) detecting fluorescence emitted by the voltage-sensitive dye in the test sample 1;

e) determining a relative emitted fluorescence 1 by comparing the emitted fluorescence from step (b) with the emitted fluorescence from step (d);

f) providing a test sample 2 comprising

i) a physiological buffer;

ii) a voltage-sensitive fluorescence dye;

iii) a cell having a K^+ channel and a transient Na^+ channel; and

iv) a potential Na^+ channel blocker

g) depolarizing membrane of the cell in test sample 2;

h) detecting the fluorescence emitted by the voltage-sensitive dye in test sample 2;

i) providing a control sample 2 comprising

i) a physiological buffer;

ii) a voltage-sensitive fluorescence dye; and

iii) a cell having a K^+ channel and a transient Na^+ channel;

j) depolarizing membrane of the cell in control sample 2;

k) detecting the fluorescence emitted by the voltage-sensitive dye in control sample 2;

l) determining a relative emitted fluorescence 2 by comparing the emitted fluorescence from step (h) relative to an emitted fluorescence from step (k);

m) comparing the relative emitted fluorescence in step (e) with the relative emitted fluorescence in step (l).

37. (New): The method according to Claim 36, wherein the resting membrane potential of the cell is between -40 mV and -20 mV.

38. (New): The method according to Claim 36, wherein the membrane depolarization of step (g) is by field stimulation.

39. (New): The method according to Claim 36, wherein the membrane depolarization of step (j) is by field stimulation.

40. (New): The method according to Claim 36, wherein the membrane depolarization of step (g) and step (j) is by field stimulation.

41. (New): A method for identifying a blocker of a persistent Na^+ channel whereby the method comprises the steps of:

a) providing a test sample 1 comprising

i) a physiological buffer;

ii) a voltage-sensitive fluorescence dye; and

iii) a cell having a K^+ channel and a persistent Na^+ channel wherein a resting membrane potential of the cell is approximately halfway between an equilibrium potential of Na^+ and an equilibrium potential of K^+;

b) detecting fluorescence emitted by the voltage-sensitive dye in test sample 1;

c) adding a potential Na^+ channel blocker to test sample 1;

d) detecting fluorescence emitted by the voltage-sensitive dye in the control sample 1;

e) comparing the emitted fluorescence from step (b) with the emitted fluorescence from step (d).

42. (New): The method according to Claim 41, wherein the resting membrane potential of the cell is between -40 mV and -20 mV.

43. (New): A method for identifying a selective blocker of a persistent Na^+ channel whereby the method comprises the steps of:

a) providing a test sample 1 comprising

i) a Cl^--free physiological buffer;

ii) a voltage-sensitive fluorescence dye;

iii) a cell having a K^+ channel and a persistent Na^+ channel wherein a K^+ conductance of the K^+ channel is at least 50-fold higher than a Na^+ conductance from the persistent Na^+ channel; and

iv) a potential Na^+ channel blocker;

b) depolarizing membrane of the cell with a Na/K pump blocker to the test sample 1;

c) detecting fluorescence emitted by the voltage-sensitive dye in test sample 1;

d) providing a control sample 1 comprising

i) a Cl^--free physiological buffer;

ii) a voltage-sensitive fluorescence dye; and

iii) a cell having a K^+ channel and a persistent Na^+ channel wherein a K^+ conductance of the K^+ channel is at least 50-fold higher than a Na^+ conductance from the persistent Na^+ channel;

e) depolarizing membrane of the cell with a Na/K pump blocker to the control sample 1;

f) detecting fluorescence emitted by the voltage-sensitive dye in the control sample 1;

g) comparing the emitted fluorescence from step (c) to the emitted fluorescence from step (f);

h) providing a test sample 2 comprising

i) a physiological buffer;

ii) a voltage-sensitive fluorescence dye;

iii) a cell having a K^+ channel and a transient Na^+ channel; and

iv) a potential Na^+ channel blocker

i) depolarizing membrane of the cell in test sample 2;

j) detecting the fluorescence emitted by the voltage-sensitive dye in test sample 2;

k) providing a control sample 2 comprising

i) a physiological buffer;

ii) a voltage-sensitive fluorescence dye; and

iii) a cell having a K^+ channel and a transient Na^+ channel;

l) depolarizing membrane of the cell in control sample 2;

m) detecting the fluorescence emitted by the voltage-sensitive dye in control sample 2;

n) comparing the emitted fluorescence from step (j) relative to an emitted fluorescence from step (m);

o) comparing the difference in step (g) with the difference in step (n).

44. (New): The method according to Claim 43, wherein the Na/K pump blocker is ouabain.

45. (New): A method for identifying a blocker of a persistent Na^+ channel whereby the method comprises the steps of:

a) providing a test sample 1 comprising

i) a Cl^--free physiological buffer;

ii) a voltage-sensitive fluorescence dye;

iii) a cell having a K^+ channel and a persistent Na^+ channel wherein a K^+ conductance of the K^+ channel is at least 50-fold higher than a Na^+ conductance from the persistent Na^+ channel; and

iv) a potential Na^+ channel blocker;

b) depolarizing membrane of the cell with a Na/K pump blocker to the test sample 1;

c) detecting fluorescence emitted by the voltage-sensitive dye in test sample 1;

d) providing a control sample 1 comprising

i) a Cl^--free physiological buffer;

ii) a voltage-sensitive fluorescence dye; and

iii) a cell having a K^+ channel and a persistent Na^+ channel wherein a K^+ conductance of the K^+ channel is at least 50-fold higher than a Na^+ conductance from the persistent Na^+ channel;

e) depolarizing membrane of the cell with a Na/K pump blocker to the control sample 1;

f) detecting fluorescence emitted by the voltage-sensitive dye in the control sample 1;

g) comparing the emitted fluorescence from step (c) relative to the emitted fluorescence from step (f).

46. (New): The method according to Claim 45, wherein the Na/K pump blocker is ouabain.